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ABSTRACT

Piagetian theory provides direction and support for an early identification, early intervention focus for special education of handicapped children. This focus includes guidance and training for parent and child to enhance their relationship and to facilitate the child's movement through normal developmental sequences in sensory-motor, cognitive, linguistic, and social areas. Piaget's sequence of stages in the development of imitative behavior is especially important for parent-infant education: (1) reflective or contagious imitation--0 to 1 month; (2) intentional sporadic imitation--1 to 3 months; (3) intentional systematic imitation of sounds and movements within child's repertoire--3 to 8 months; (4) imitation of movements within child's repertoire which he cannot observe himself performing (coordination of elements)--8 to 10 months--and beginnings of imitation of new auditory and visual-motor models--10 to 11 months; (5) systematic imitation of new auditory and visual-motor models--12 to 15 months; and (6) deferred imitation and beginnings of representational imitation (internalized coordination precedes external manifestation)--15 to 17 months. Pseudo or elicited imitation can be effectively implemented with very young exceptional infants and children. Care must be taken to guide parents and teachers in "natural" intervention techniques that do not strain parents or child. Home demonstration should begin early and continue until the child is ready for school. Models for imitation must be consistent with the child's capabilities and experiences and should build upon them. (KM)

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PIAGETIAN THEORY ON IMITATIVE BEHAVIOR IN CHILDHOOD: DIRECTION FOR PARENT-INFANT EDUCATION

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IMPLICATIONS OF PIAGET'S THEORIES ON IMITATIVE BEHAVIOR FOR PARENT-INFANT EDUCATION

Paigetian theory provides direction and support for an early identification, early intervention focus for special education. Such a focus is certainly more optimistic than the more traditional remedial construct.

Piaget's early research (1951) on child development included the study of play and imitation in childhood. The increased attention given this research by those involved in early childhood development and education is a sort of renaissance if we consider the years which have elapsed since the work of Pestalozzi, Froebel, and Montessori. The lag between Piaget's early studies in the 20's and 30's and the recognition of that work is another case in point.

In special education, early childhood programs have included training for parents as well as children in the belief that "around the clock" attention to the needs of the child is necessary. Educators of the deaf have been especially concerned with earlier educational intervention in light of the devasting impact of deafness on the child's communication processes. In California, there are approximately twenty federal or state funded public projects, and some private programs for deaf infants and their parents. The children served range from six to thirty-six months in age. A committment to the need for early identification, early intervention, and to theories concerning critical and/or sensitive periods in the child's development constituted the rationale for initiation of these programs.

Program objectives include the provision of guidance and training for parent and child to enhance their relationship and to facilitate the child's

movement through normal developmental sequences in sensory motor, cognitive, linguistic, and social areas. The emphasis is on sequences rather than on age-related norms. The sequences proposed by Piaget (1952) concerning cognitive development have already proved to be a valuable resource for educational planning, and I believe his study of imitation and play in childhood also provides direction for curriculum construction.

Since parent-infant programs focus on the child between birth and three years of age it is sensory-motor development and the early stages of representational cognitive processes which are of concern, and for this reason the development of imitative behavior, which is a basis for all learning, is particularly pertinent. Piaget (1951) spent considerable time closely observing and analyzing the imitative behavior of the very young child. The theories he formulated to account for the sequences he observed are especially important for parent-infant education.

The following sequence of stages in the development of imitative behavior is based on Piaget's (1951) study.

Stage I	Reflective or contagious imitation	0 to 1 month
II	Intentional sporadic imitation	1 to 3 months
III	Intentional systematic imitation of sounds and movements within child's repertoire	3 to 8 months
IV	Imitation of movements within child's repertoire which he cannot observe himself performing (coordination of elements) and,	8 to 10 months
	beginnings of imitation of new auditory and visuo-motor models	10 to 11 months

Stage V	Systematic imitation of new auditory and visuo-motor models	12 to 15 months
VI	Deferred imitation and beginnings of representational imitation (internalized coordination precedes external manifestation)	15 to 17 months

Stage I Reflexive or Contagious Imitation 0 to 1 month

According to Piaget, this is not true imitation. If an infant begins to cry when in the presence of other crying infants, it appears to be a sort of contagious or reflex response. The infant does not yet perceive himself as a separate unit, and therefore does not realize that the cry he experiences is not his own. Piaget suggests that the child perceives the cry as his own and merely continues it. The sound of crying serves as a sort of behavior releasing mechanism. There is no attempt on the part of the infant to reproduce the exact sound he experiences.

Stage II Intentional Sporadic Imitation 1 to 2 months

In differentiated crying or vocalization, the infant is apparently imitating his own sounds. He appears to reproduce sound for its own sake. However, in order to imitate or reproduce his own sound, the infant must first perceive that he is making the sound; have become aware of some coordinated vocal and breath movement necessary to produce a facsimile of the sound, and then perceive the imitation to be similar to the previous sound. We can see that the infant is already performing a relatively complex cognitive operation. An example of this is the difference noted between the infant's cries when he is hungry, and when he is tired.

The same pattern is reflected in visuo-motor behavior in such behaviors as putting the thumb in the mouth, and focusing on moving objects.

A second phase in sporadic imitation is mutual imitation which occurs when someone imitates the infant's sound while the infant is uttering it. Piaget observed that the infant then appeared to be stimulated to persist in making his own sound. In this instance, the infant does not attempt to approximate the outside stimulus but rather to continue his own previously uttered sound.

Mutual imitation is important in terms of intervention strategies which might insure that the exceptional infant is encouraged and reinforced for making and imitating sounds even with reduced sensory motor input.

This elementary form of imitation provides the basis for the child's gradual expansion of his repertoire of experiences. Experimentation with sound, in deaf infants, and with movement in case of blind infants would be expected to be restricted due to reduced perceptual experience, and the consequent loss in intrinsic reinforcement. In cases where early identification has been made, parents could be directed to provide extrinsic reinforcement and alternate perceptual experiences in order to sustain these beginnings of imitative behavior, which are prerequisite to later development.

Stage III Intentional Systematic Imitation 3 to 8 months

During this stage the infant systematically and persistently imitates sound and movements already in his repertoire. With increasing coordination of auditory-vocal and visuo-motor processes the infant becomes much more accurate in imitation. He builds on the isolated sounds and movements he has through accidental combinations of them into new sounds and movements.

The infant does not yet demonstrate accuracy or persistence in imitating new models presented to him, but appears to concentrate on expanding his own repertoire through experimentation.

The infant appears to delight in imitating familiar sound and movements presented to him. This ability indicates a marked increase in discrimination and recognition of sounds and movements and suggests that the infant has a memory for coordinations necessary to reproduce them.

Piaget suggested that the child at this stage does not analyze the elements involved in these coordinations but rather perceives them as a unit, a gestalt. It is not until around eight months that the infant appears to intentionally coordinate elements in a given vocalization or movement.

Around seven or eight months, the infant begins to imitate movements others make which are similar to his own, and which he can observe himself performing. For example, the infant can imitate moving hands together and apart, but not sticking out his tongue. The incidence of sensory deficit, extreme retardation, or physical involvement can generally be determined by six to eight months. It is during this stage that noticeable differences in response to stimuli in the environment have been noted in exceptional infants. For example, qualitative and quantitative differences in vocalization and attending to sound in deaf infants; marked retardation in sensory motor behavior in blind and seriously retarded. Again intervention strategies which reflect the normal imitative behavior patterns are indicated.

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Stage IV a. Imitation of Movements Which the Infant Cannot Observe Himself Performing 8 to 10 months

When the infant is about eight months of age he begins to imitate movements made by others which he cannot observe himself doing; e.g. sticking out his

tongue, opening and closing his mouth. However, to sustain the imitation, that is to insure its spontaneous repetition, the infant appears to need training and practice. The infant does not immediately make the necessary association between his own mouth and another's mouth, for example. This ability to repeat movements without being able to see himself doing so implies a beginning in analysis of the behavior in question. Whereas the infant was able in Stage III to imitate an immediate visuo-motor movement he was probably not perceiving the model as separate from himself, but rather as a continuation of his own. For example, in imitating the bringing together and moving apart of hands, the infant seemed to be aware of the model's hands rather than his own, or perhaps, it would be more accurate to say, he saw both sets of hands as one unit. In Stage IV, the infant appears to: 1) observe and attend to the movement, 2) make the association between some aspect of the model's body and his own, 3) internalize the movement he observes, 4) and reproduce it by coordination of the relevant elements, e.g., mouth, tongue. Whereas, in Stage III, the movement was perceived as a gestalt, in Stage IV, the movement is perceived as a coordination of separate elements.

b. Beginnings of Imitation of New Auditory and Visuo-Motor Models

10 to 11 months

In order to imitate a new model, or new coordination of existing behaviors, the infant must have the capabilities necessary for that coordination. He must possess the separate elements involved in the new model. Piaget sees this new model, then as a re-combination of already learned elements (schema) whereas up to now the infant, through play and experimentation,

has arrived at new combinations of his own previously learned elements, he is now ready to imitate new models through intentional coordinations of previously learned elements.

The new model should not be too dissonant or incongruous to existing behaviors of the infant. The factor of dissonance in learning has become studied by Festinger (1957) in his "cognitive dissonance" theory, and by Hunt (1961) in his investigation of the need to establish a 'match' between the child and the experiences. Dissonance research indicates that in providing experiences to stimulate infant imitation, the relationship between that experience and the child's existing knowledge must be taken into account.

Piaget also stresses the need for the child to make tentative investigations of new sounds and movements and for ample opportunity to practice them. In this regard stimulation, reinforcement, and encouragement by parent and teacher of the exceptional appears to be a necessity.

Stage V Systematic Imitation of New Models, and Beginning of Association of Meaning to Sounds 12 to 16 months

The child is now able to coordinate more and more elements in imitation of new and more complex models. He can coordinate visuo-motor and auditory-vocal processes in a single behavior. He begins to perceive uses for schemas (movements or vocalizations) e.g., "ga-ga" for water; pulling a string to reach an object. The child also begins to associate meaning to sounds he makes and hears, that is, he is beginning to use sounds as words. This stage is characterized by re-combinations of familiar behaviors and experimentation in terms of use. The child's increased mobility provides a wider range of

models and experiences, and his ability to attend to more complex stimuli provides constant stimulation for imitation and experimentation.

Piaget draws a parallel between imitative behavior and the overall cognitive development of the child. As the child becomes more aware of himself as separate from the environment he becomes more objective in his perception, and thereby, more objective in his imitative behavior. In Piaget's view the child up to this point has not achieved true imitation but is moving toward it as he becomes more objective.

Stage VI Beginnings of Representative Imitation and Further Development of Imitation 15 to 18 months

Deferred imitation is imitation by the child of a sound or movement or some combination of the two, sometime after he has seen or heard them. The child appears to internalize an image of the model (visuo-motor, auditory, kinesthetic) in memory, which he then recalls at a later time. This is the beginning of representative imitation and reflects a difference in the degree of proximity to the stimulus. The child is also able to imitate complex new models, almost immediately, e.g. crossing arms and nodding head. New sound combinations are used correctly in deferred situations, which is a manifestation of increased discrimination ability and auditory memory.

Piaget notes that this stage coincides with early symbolic representational development. The child begins to use symbols to represent his experiences. These symbols are largely images, or what Piaget calls signifiers, i.e. they are related to the object they signify by some resemblance. These symbols are largely subjective or personal in nature. The child at

15 to 17 months is also beginning to use words (arbitrary, objective, impersonal signs) to represent his experiences. However, the child still relies largely on imagery at this level.

From about 18 months through six or seven years, the child continues to imitate and also participates in make believe play (ludic symbolism) and role playing. The child, now more socially oriented, becomes greatly influenced by the person providing the model for imitation. If he holds the person in high regard he tends to emulate him in many ways, rather then in isolated instances.

In addition to the personal regard for the model, the degrees and extent of the child's voluntary imitation are affected by proximity, consistency, and congruity. The child tends to be influenced by persons most frequently in his environment; and to imitate models which are consistently repeated, and are congruent with his previous experiences. Imitation continues to play an important role throughout the development of the child, indeed, throughout life.

In summary, let us consider these beginning stages as they pertain to Parent-Infant Education. Several factors discussed by Piaget are particularly relevant to educational intervention.

1. Imitation seems to be an inherent or characteristic behavior in children.
2. The very young infant can imitate only that which he himself has first performed.
3. The child seems to be motivated to imitate by a desire to continue the experience. The experiences therefore, appear to be intrinsically motivating.

4. Pseudo-imitation or elicited imitation may produce qualitative and quantitative increases in the child's imitative behavior.
5. Pseudo-imation is sustained by repetition and practice.
6. The child's first experiments with, and investigates his own production, and then begins to experiment with new models.
7. The dissonance factor in new models affects the child's willingness to imitate, and his success in imitation.
8. The child needs to be proficient in the separate elements within an activity before he can coordinate them into a new activity.
9. As the child becomes more socially oriented, the regard he holds for the person who serves as a model becomes a critical factor in imitation.
10. Imitative behavior parallels cognitive development.

These statements reflect a sample of the direction provided by Piaget's work on imitative behavior, and early child development generally, for educational planning. A more exhaustive study is beyond the scope of this presentation. The need for early identification and early intervention is clearly demonstrated. Pseudo or elicited imitation can be effectively implemented with very young exceptional infants and children. In instances of reduced sensory motor input parents can provide increased and/or alternate models to stimulate the child's imitation. Parents and others must be alert to the child's efforts, and should reinforce and expand them immediately.

Care must be taken to guide parents and teachers in "natural" intervention techniques which do not strain parents or child. Home demonstration should begin early, and be maintained on a regular basis until the child is ready to go to school. In the earliest stages, models should be based on the

child's own efforts, in agreement with the normal sequence. In later stages, when new models are introduced, attention must be given to the existing capacities of the child in terms of coordinations which may be involved.

As the child reaches 12 to 15 months of age, the persons who will most frequently be available to the child should be involved in the training program. At this stage, children tend to reject mothers and fathers as teachers, because the role is not consistent with the child's concept of the role of parent. The same holds true of the teacher in the home. Therefore, it is imperative to freely move both teacher and parent in and out of both settings so that the child will learn to accept them in their dual roles.

The last statement regarding the parallel development of cognitive and imitative behavior might appear to be an oversimplification. However, in terms of intervention it is crucial to consider the cognitive level of the child in selection of models for imitation. The models must be consistent with the child's capabilities and experiences, and build upon them.

In conclusion, I would like to suggest qualities which I consider critical in selection of models (behaviors) for imitation.

Models should be:

Discriminable

Familiar; related to child's own experience

Consistent in form and meaning

Interesting

Reinforcing

Desirable in eyes of the child

Within the child's capabilities

Immediately and frequently available.

If we then provide freedom to experiment and investigate, reinforce and expand the child's efforts, provide acceptable intervention models, we should be able to effectively enhance the child's learning and enjoyment of life, and to provide direction and reassurance to the parent.

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